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ABSTRACT

This study was designed to analyze the process of curriculum development adopted by developers in language arts, biology, and geography, in a centralized educational system. Specific objectives were to identify naturalistic models of curriculum development used in curriculum projects in Israel; point out relationships between contextual factors (such as location of development teams in universities or in the Ministry of Education) and the characteristics of the development process; and uncover elements of the personal, practical knowledge of the participants in the development process. Among the findings reported and discussed are those indicating that: (1) the average time of development of a project was 3 to 5 years; (2) almost all projects have engaged in formative evaluation; (3) all projects were funded by the Ministry of Education; and (4) although organizational characteristics of individual projects varied, several modes of operation could be identified. For example, two modes of cooperation and interaction (group interaction and linear mode of team work) were identified across all projects. One conclusion reported from analyses of the curriculum projects and from interviews with the curriculum developers is that there is not one naturalistic model of development; every project examined has its own special blend of characteristics. (JN)

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WHAT DO CURRICULUM DEVELOPERS DO?

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Abstract

The study describes a variety of processes associated with the actual work of curriculum development. Through a combination of methods such as analysis of documents, survey, and personal interviews it attempts to portray the action of curriculum development and a wide array of factors which influence this action, as exhibited by selected curriculum development projects in Israel.

This study was designed to analyze the process of curriculum development adopted by developers in language arts, biology and geography, in a centralized educational system. Specifically the objectives were:

1) to identify naturalistic models of curriculum development in use in curriculum projects in Israel;

2) to point out relationships between contextual factors such as the location of development teams in universities or in the Ministry of Education and the characteristics of the developmental process.

3) to uncover elements of the personal, practical knowledge of participants in the development process.

Perspectives

Conceptual frameworks for curriculum development are rarely realized in curricular practice. Therefore, attempts were made to identify naturalistic models of development (Walker, 1971). Case studies of curriculum projects shed light on the complexities of the development process and its manifold forms (Shipman 1974, Reid and Walker 1975, Eden 1978).

The present study distinguishes between externally imposed categories for describing the curriculum development process, on one hand, and the unique personal aspects of the process, as shaped by the personal, practical knowledge of participants on the other hand. The first approach is very similar to what is called the etic viewpoint which studies behavior from outside of a particular system. The second approach is similar to what is

called the emic viewpoint which studies behavior from inside the system (Pike, 1966). Emic descriptions provide an internal view of the process under investigation and relate to the personal perspectives brought to the setting by the individual developers. The following categories served for the etic analysis of each development project: composition of development team; source of funding; location of development; organizational characteristics such as locus of decision making, mode of interaction and cooperation, flow of information; kind and number of published curriculum materials; evaluation efforts; development time. Most of these categories were used by Lockard (1972).

The emic characteristics of the development process were investigated in order to uncover the personal, practical and experiential knowledge of curriculum developers. This approach follows the framework suggested by Elbaz (1981), Clandinin and Connelly (1983) and Clandinin (1983). Practices of practitioners, their verbal communications about their work, their actions and products, are viewed as "minded", as expressions of their personal practical knowledge. Elbaz uses three terms to structure the practical knowledge of teachers: rules of practice, practical principle and image. Rules of practice are clearly formulated statements of what to do in a particular situation. The practical principle is a broader, more inclusive statement. Images are personally held mental pictures, mostly formulated in brief, metaphoric statements which combine feelings, values, needs and beliefs. According to Clandinin and Connelly (1983)

images are kinds of knowledge, embodied in a person and connected with the individual's past, present and future experiences. Studies of personal practical knowledge provide the researchers with a person-centered language and perspective for accounting for actions of school practioners. Curriculum developers, whether they are teachers, university professors or Ministry of Education officials, are practitioners in the curriculum field. Hence, their practice can be viewed as an expression of their personal, practical knowlege.

The first part of this paper, which includes this introduction, is an account of the perspectives and methodology of the study. The second part presents the data collected from an etic point of view followed by discussion of the findings. The third part presents interpretative accounts of the personal practical knowlege of curriculum developers.

Methods

The subject matter areas selected for the study were as follows: language arts, representing the humanities; biology, representing the natural sciences; and geography, representing the social studies. Curriculum development projects in those areas were identified through analysis of reports of the Ministry of Education, up to 1983, and through interviews with directors of the Center for Curriculum Development at the Ministry of Education. Documents (syllabi, descriptive articles, internal reports and publications of the Ministry of Education) relating to these development projects were analyzed using the above

mentioned categories. Unstructured, open-ended, several-hours long series of interviews were held with directors, project coordinators and members of the developing teams. These interviews were recorded and interpreted by the investigators.

Results

Tables 1 to 4 present summaries of the etic characteristics of curriculum development projects in the three subject areas included in the present study. The figures reflect curriculum development in close to twenty years.

The first, chronologically, has been the senior high school biology project which started in 1965 at the Hebrew University in Jerusalem. A detailed description of this project, its history and its products may be found elsewhere (e.g. Tamir, 1976; Tamir and Amir, 1981). This project has been under continuous evaluation since its beginning and many of the evaluation results have been published in the professional science education literature, mostly in the U.S.A. and the U.K.

The Curriculum Center of the Ministry has housed the language arts program. It was founded in 1967 and since then has undertaken the task of developing materials in all subject matter areas for the junior and senior high schools and in some areas such as language arts, for elementary schools as well.

The University of Haifa has been contracted by the Ministry of Education to develop specific materials in biology, geography and other disciplines.

Table 1: Characteristics of Israeli Curriculum Projects in Language Arts

Grade Level	Topic	Development Location	Student Text	Other Student Materials	Teacher Guide	Formative Evaluation	Summative Evaluation
K	Language	Ministry	-	2	6	+	+
E	Language	Ministry	13	3	10	+	-
E	Expression	Ministry	7	7	7	+	-
E	Literature (Selected pieces)	Ministry	48	2	39	+	-
E	Literature	University	4	1	3	+	-
J	Language	Ministry	8	2	4	+	-
J	Expression	Ministry	9	-	2	+	-
J*	Literature	University	7	1	12	-	-
J	Literature	Ministry	12	1	23	-	-
J**	Language	Ministry	10	1	12	-	-
J	Language for newcomers	Ministry	4	-	4	-	-
S	Language and	Ministry	4	-	2	-	-
	Total		136	20	125		

K = Kindergarten E = Elementary J = Junior High S = Senior High

* for slow learners ** for special education

TABLE 2: CHARACTERISTICS OF ISRAELI CURRICULUM PROJECT IN BIOLOGY

Grade Level	Topic	Development Location	Student Text	Other Student Materials	Teacher Guide	Formative Evaluation	Summative Evaluation
K	Observations and perceptions	University	-	4	4	+	-
E	Organisms and their environment	University	9	3	14	+	-
E	The human body	University	6	5	6	+	-
J	Animals and their	Ministry	7	7	5	+	+
J	Plants and their	Ministry	3	3	6	+	-
J	The human body	University	1	1	1	+	-
J	Man and his environment	University	3	2	3	+	-
J+S	Biology for culturally disadvantaged	University	12	-	5	+	-
S	Biology: An inquiry into life	University	8	10	8	+	+
S	Interactions of ideas & experiments	University	3	-	3	+	+
S	Biology for slow learners	University	2	-	-	-	-
S	Quantitiative Biology	University	1	-	1	+	-
S	Reproduction and production	University	1	-	1	+	-
S	Energy Transformations in living organisms	University	1	-	1	+	-
S	Animal Physiology	University	1	-	1	+	-
S	Invitations to inquiry	University	-	-	1	-	-
S	Inquiry oriented laboratories	University	7	-	7	+	+

TABLE 2: CHARACTERISTICS OF ISRAELI CURRICULUM PROJECT IN BIOLOGY (continued)

Grade Level	Topic	Development Location	Student Text	Other Student Materials	Teacher Guide	Formative Evaluation	Summative Evaluation
S	Tests and test results	University	10	-	10	+	-
T	Teaching biology in junior high schools	Ministry	-	-	4	+	-
T	Teaching biology in senior high schools	University	-	-	5	+	-
T	Training biology teachers	University	-	-	8	-	-
J	Agriculture as an Environmental science	Ministry	15	5	10	+	+
S	Life science and Agriculture	Ministry	6	-	1	+	-
	Total		96	40	95		

K = Kindergarten E = Elementary J = Junior high S = senior high
T = Teachers

TABLE 3: CHARACTERISTICS OF ISRAELI CURRICULUM PROJECTS IN GEOGRAPHY

Grade Level	Topic	Development Location	Student Text	Other Student Materials	Teacher Guide	Formative Evaluation	Summative Evaluation
E	Geography of Israel	Ministry	7	3	9	+	-
E	World Geography	Ministry	3	-	3	+	+
E	World Geography	University	5	-	3	+	-
J	World Geography	Ministry	3	-	3	+	+
J	World Geography	University	1	-	1	+	-
J	Geography of Israel	University	1	-	-	+	-
T	Teaching Geography	Ministry	-	-	1	-	-
	Total		20	3	20		

E = Elementary J = Junior high T = Teachers

TABLE 4: NUMBER OF CURRICULUM PROJECTS IN EACH SUBJECT MATTER AREA

Subject matter area / grade level	Language Arts*	Biology	Geography
Kindergarten and elementary schools	5	3	3
Junior High Schools	6	5	3
Senior High Schools	1	10	-

Table 1 shows us that as far as language arts are concerned most of the curriculum development has taken place at the Curriculum Center of the Ministry of Education. About half of the materials aim at the elementary school and a similar number aims at the junior high school. Very little work has been done for the senior high school. As for the different topics, 50% of the materials deal with language skills (e.g. word meanings, grammer, pronounciations, etc.), 13 % with oral and written expressions and the rest with Hebrew literature. Actually, most of the curriculum development concerning literature has involved selection of appropriate pieces and designing suggestions for teachers on how to teach these selected pieces.

Table 2 shows that the biology materials aimed at elementary and senior high schools were developed in universities (actually one university has undertaken the development for senior high schools and another one that for elementary schools). The Curriculum Center of the Ministry has concentrated on the junior high schools. It may also be seen that both in the elementary and in the junior high school the emphasis has been on Man, animals, plants and their environment while the burden of teaching the remaining biological topics has been left to senior high schools.

Table 3 and 4 reflects the fact that the study of geography is much more limited than either language arts or biology. Most of the development has been carried out at the Curriculum Center of the Ministry although about a quarter was designed in one university. The lack of materials development for senior high

school reflects the low emphasis on geography and earth science in Israeli senior high schools. It may also be seen that in elementary schools there is about equal emphasis on world and Israel geography while at the junior high school much more emphasis is placed on world geography.

We turn now to a more detailed description of one project.

The Story of One Curriculum Project

The Israel High School Biology Project (IHBP) is an example of a project located in a university and directed by university faculty. At the same time, however, it has maintained direct contacts with schools, teachers, inspectors and various departments of the Ministry of Education and has also taken charge of implementation, namely, the actual monitoring of instruction, by establishing a variety of services such as supply centers, in-service training, and guidance in schools. The main writing tasks were carried out by teachers. The project has maintained control over evaluation by undertaking the task of producing matriculation examinations.

It was resolved by the developers that the best policy would be to adapt the American BSCS curriculum for local needs. (High school biology was considered to consist mainly of decontextualized knowledge which could be adapted easily. Conversely, biology for lower grades was considered to be more appropriately related to the context of the immediate environment, therefore, local, Israeli, curricula were developed for these grade levels.)

Once every three weeks the whole group met in a central place. In each of these meetings one or two pairs of teachers presented their adapted chapters and a general deliberation took place. In most instances, biologists working on the topics under discussion were invited to participate, and they were the only professionals other than the teachers to enter these discussions. Consequently, the decisions made were based to a large extent on the opinions of the scientists, whose competence was highly regarded and whose judgement was therefore usually accepted; the considerations of subject matter dominated the decisions. After these meetings the material was revised and handed to a professional writer to ensure stylistic coherence.

Evaluation was to be achieved by nominating an evaluator who had no responsibility for the actual development of materials, but, nevertheless participated in all the deliberations. However, as it happened, all the decisions about the selection of the BSCS Yellow Version for adaptation and the actual procedures of development which followed, including the determination of general aims, the planning and actual preparation of instructional materials were not based on either the formal or informal evaluation of the nominated evaluator. These decisions were based primarily on the assumption that a program which had been found to be feasible in the U.S.A. had high probability of being feasible in Israeli schools. Other decisions concerning the selection of program components, modifications of program elements and the specification of minimal conditions of usage (such as minimal laboratory facilities) were made by the

development team based on deliberations and expert judgement.

At the same time, the evaluator occupied himself with designing a formal evaluation scheme which was aimed mainly at assessing students' achievement in the following areas:

cognitive achievement in biology;

understanding the nature of science and its processes;

inquiry skills (such as formulating hypotheses and designing controlled experiments);

attitudes toward science and nature.

A considerable amount of effort went into the selection and design of evaluation instruments. Some available instruments were translated into Hebrew with some modifications. Others made use of test items taken from tests published by the BSCS in the U.S.A. and were designed by the evaluator with the consent of the project team.

Along with the formal evaluation study, informal evaluation took place based on visits to schools, discussions with teachers and other sources. A special characteristic of the IHBP was its step by step publication of materials, which extended over five years. This continuous process had its drawbacks. For example, in several instances a class completed the published materials before the next unit was available and the teacher had to continue even though the students had no textbook.

In retrospect, though, the step by step Israeli process has had certain advantages, prime among them the opportunity to learn from mistakes. Feedback collected on the early chapters assisted

the team in making decisions with regard to the writing of the next ones. The extended period of development also gave teachers and schools the opportunity to try some of the materials before committing themselves and their students to the new program.

This process whereby teachers and schools utilize samples of curriculum materials as a means for deciding whether or not to use a program, and in what ways to use it with different students and by different teachers we call consumer evaluation. This is an informal evaluation process which takes advantage of the wisdom and judgement of practicing teachers rather than that of learned evaluators.

Unlike curriculum projects which have conceived their primary function to be the design and development of curriculum materials, the Israeli Biology Project has placed at least equal emphasis on providing the necessary conditions for adequate implementation and for assessment and evaluation. In each of these phases the Project team has made a point of cooperating with various departments and key persons in the Ministry of Education, as well as with other persons and organizations related to biological education. Such cooperation has proved to be instrumental both in implementation and in evaluation. In a country with a centralized education system, such as Israel, a policy of involving the system will yield better results than one which attempts to fight it.

Discussion

There appears to be some general characteristics of

curriculum development in Israel. The average overall time of development of a project was 3 to 5 years. Almost all projects have engaged in formative evaluation at the various stages of development. Few projects, though, underwent summative evaluation. All projects were funded by the Ministry of Education, even those located at universities. Development teams were mainly composed of experienced teachers and subject matter specialists. Sometimes the teams consisted solely of teachers some of whom had special training in curriculum development, and sometimes solely of university professors. Other experts, such as psychologists acted as "outside" consultants. Their expertise was rarely requested. On the other hand, language editors and illustration specialists accompanied the development work of all teams.

Organizational characteristics of the project varied. The following modes of operation could be identified:

1) Locus of decision making.

Decisions were handled at two levels: The first was the level of the Planning Committee which decided on basic aims, content and the general framework. The second was the level of the Working Team, which decided on operational objectives, student activities, format, sequence, time allocation and content areas to be emphasized. The Working Team was responsible for the construction of curriculum materials to be used in the schools and for all evaluation procedures carried out during the development process (Eden, 1974). Ministry officials as well as

University faculty members, mainly subject matter experts, and teachers participated at these two levels of decision making, though more practicing teachers were involved at the Working team level than at the Planning Committee level. All Planning Committees were appointed by the Ministry Center for Curriculum Development which nominated also the members of these Working Teams located at the Center. Whenever the actual construction of curriculum materials was delegated to Working Teams situated at universities, the personnel of the team was locally determined. Consequently a larger number of faculty members were involved in the development process at universities. The environment in which decision making took place shaped the decisions to a large extent. Working Teams situated at the Ministry Center felt more committed to the curriculum framework as laid out by the Planning Committee, whereas University Teams were more flexible in their interpretations of this framework. Subject matter experts were highly influential in the decision making process, especially in University-based projects. Evaluation procedures were standardized at the Ministry Center, which included a special evaluation department. Evaluation modes were more diversified at University-based projects, which varied as to the amount of time and effort devoted to evaluation procedures.

2. Mode of Cooperation and Interaction

Two main modes of cooperation and interaction could be distinguished. One is a group interaction mode and the other a linear mode of team work.

The first mode is characterized by intensive deliberation sessions at every stage of curriculum development. Initial group deliberations focus on aims, choice of content and instructional strategies. Later on the team discusses preliminary drafts of curriculum bits and pieces and their trial uses. The final version of the curriculum is shaped on the basis of decisions made by the team, continuously interacting in the process. The second mode is characterized by a linear flow of events in the development process. The team is smaller and little time is devoted to group deliberations. Different members of the team work in a more solitary manner, constructing curriculum materials. Their products are then transferred to other participants such as subject matter experts and experimental teachers for comments and suggestions for modifications.

The first mode is more consistent with the accepted models of curriculum development as proposed by Bruner (1960) Schwab (1971) and Tyler (1949, 1975), and implemented in some major curriculum development projects, such as the BSCS (Grobman, 1969). The second mode is more consistent with the traditional mode of individual academic creation and more prevalent in University-based projects. An interesting development in this line is the growing number of curriculum packages prepared by graduate students as master's and doctoral theses (Tamir, 1984).

3. Flow of Information

The Israeli curriculum development process, which takes

place in a centralized educational system, depends to a large extent on an uninterrupted flow of information. Eden (1974) describes this flow starting with general policy decisions made at the Parliament level, through directives originating at the Ministry of Education, and the planning committees, ending with the Working Team which constructs the curriculum materials. Moreover, one of the guiding principles of curriculum development in Israel, as in many other places, is the use of evaluation in the shaping of curricula. Evaluation procedures require a smooth information flow, from developers to evaluators and back.

Yet in practice many breaks occur in the process of passing on of information. General educational principles lend themselves to divergent interpretations and are sometiems ignored. Planning committees are more active during the first stages of curriculum development when the basic aims, principles and general frameworks are dealt with. Later on their activities are greatly reduced and their impact on their Working Teams weakens considerably. General frameworks are seldom changed and this lack of flexibility in a rapidly changing society leads to greater autonomy of the Working Teams. An interesting development in this line is the new phenomenon in Israel of a growing number of local, school-based curriculum development projects, which carry on an autonomous curriculum construction with the blessing and assistance of the Ministry of Education (Sabar et al., 1982).

In the more narrow context of the developing team, breaks occur in the flow of evaluation information to the developers, especially information about implementation. Most developers

complained about the difficulty of receiving relevant information which could be utilized in the development process. Some were ready to give up evaluation all together. Most were disappointed by the lack of information transmitted by the developing team to teachers. The biology curriculum project which was briefly described, showed a closer and continuous interaction with teachers.

The Naturalistic Curriculum Development Model in Israel

How can we sum up the foregoing description and discussion? One cannot abstract a single, or even several distinct development models operating in Israel. Rather, it was possible to identify certain structural, etic, characteristics in the investigated projects. Some of these characteristics were fairly common to all projects, i.e.: source of funding, development time, formative evaluation activities, publication of student texts as well as teachers' handbooks.

Some of these characteristics vary in the different projects. Thus, we found varying compositions of development teams. Sometimes teachers with special training in curriculum development were the backbone of the team and subject matter experts functioned as consultants. In other projects, mainly those situated at universities, the team was composed of subject matter experts who had no prior training in curriculum development, with teachers functioning as consultants. Modes of collaboration and interaction among team members varied and were largely determined

by the location of the project and the personal knowledge and experiences of the participants. Although a systematic model of curriculum development (O'Hanlon 1974) was advocated by the Ministry, with emphasis on team work, objectives, and evaluation procedures, great variance among projects was found in this study. Though features of the systematic model could be identified in most projects, their actual expression in each project varied and was determined by the instructional content as well as the personal experiences and practical knowledge of participants.

In order to gain deeper and more meaningful insights into the doing of curriculum developers we turn now to a brief account of the personal practical knowledge of a few curriculum developers who were involved in the investigated projects.

Personal Practical Knowledge of Curriculum Developers

As stated above, the present study draws upon Elbaz' (1980) account of practical knowledge and on Clandinin's (1983) conceptualization of image as a central construct for understanding the personal practical knowledge of educators.

We relate in our account to interviews with three curriculum developers, one who was involved in a university-level geography project, one in language arts curriculum development at the Ministry of Education, and one in a language arts curriculum situated at a University.

1) Geography curriculum developer and team coordinator, B, is a university professor in the Geography Department who used to be a high school teacher. He was approached about ten years ago by

a colleague at the university, who at that time coordinated the curriculum development project and was asked to join the team. The Planning Committee had already finished its work and the general framework of the curriculum was given. The Working Team at the Ministry was unable to produce the large amount of curriculum materials needed by schools and therefore part of the development of a number of topics was transferred to the University. Joining the curriculum development project was for B at first a social and not an intellectual challenge.

> "The topics were close to my heart, and besides, I felt a sense of social obligation because of the war (this was shortly after the Yom Kippur War). After the war contributing to education was viewed as a national challenge."

B did not have any previous knowledge of, or experience in curriculum development. Yet soon the task started to intrigue B:

> "The topic did interest me, though, and I thought immediately about trying a 'fictional event', known in the professional literature, which we used with our University students."

The personal knowledge of B as a teacher at the university level was drawn on in his attempt to approach the development situation.

> "The major difficulty was the formulation of questions for the pupils...How to intersect the pupil in the topic to be learned."

These questions bothered B from the beginning. His answer to these questions is stated in the form of a practical principle:

> "you can teach any subject at any age level."

This principle reminds one strongly of Bruner's theoretical statement that

> "any idea or problem or body of knowledge can be presented in a form simple enough so that any particular learner can understand it in a recognizable form." (Bruner, 1967, p. 44).

For B the principle was practical, stemming from his experience of teaching at different grade levels in junior high schools and universities.

Again and again B returns to the problem of pupil motivation.

> "Are the questions appropriate for pupils? Do they arouse interest? Are they understandable? "

At that time B read a children's book in his personal role as father. The book was called In the Jungle and was composed of letters written by an Israeli boy in Africa to his friends at home. Applying the practical principles noted before, this technique was adopted for the curriculum unit on West Africa.

The basic image shaping B's curriculum practices is an image of "the bored pupil" who does not see the overall structure of his learning efforts and could not care less. In the background of the image is B's recollected experience as a pupil.

> "The problem of the pupil is that the picture gets fragmented and the overall structure disappears."

Clandinin and Connelly (1983) conceptualize image as drawing

> "both the present and future into a personally meaningful nexus of experience focussed on the immediate situation which called it forth." (Clandinin and Connelly, 1983, p. 3).

This seems to be the role of "the bored pupil" image in B's curricular efforts.

B consistently invented "connecting ideas" for structuring the curriculum materials. These "connecting ideas" are not synonomous with basic concepts or the structure of the discipline. Rather they are connecting threads for structuring instructional activities, making the learning process meaningfull and interesting for pupils. The creation of connecting ideas is another practical principle of B. The mode of cooperation and interaction among team members was mainly linear, B acting as the creative inventor of the overall structure, perceiving himself as a teacher directly confronting his pupils. Therefore teachers and colleagues, who participated in the team and received the material to add their input, were asked to put themselves in the role of pupils, interacting with the materials. Little attention was given to teachers who were to implement the curriculum:

> "We thought initially about pupils, not about teachers, only later, at stages of trials, the issues and problems of teachers came up."

The curricular practices of B were minded by his personal practical knowlege of the teaching-learning situation.

2) Language Arts Curriculum Developer and Team Coordinator, R

R is an experienced elementary teacher who has worked in the Center for Curriculum Development of the Ministry of Education for the last ten years. She is a very religious person, highly devoted to her educational work. She studied curriculum studies at the university and considers her courses there as challenging her intellectually to search for ways of improving education through the curricular enterprise.

> "All educational studies are empty rhetoric, except curriculum studies. I use curriculum concepts such as behavioral objectives continually in my work."

We shall see later how this curricular practice can be related to R's personal practical knowledge. Another curricular practice adopted by R in her team is an intensive interactive mode of cooperation.

> "The whole team is involved in development, in trying to solve problems. We are constantly engaged in group deliberations relating to each other. Any bit of curriculum material that anyone prepares is commented on or argued about and edited together, until the curriculum is ready for publication."

A wide array of experts is involved in the development process, psychologists as well as subject-matter specialists.

> "We had a problem with the topic of Independence Day, how to relate to the issue of the many war victims, so we brought in a psychologist whose advice was included in the teachers' handbook."

Under R's chairmanship the team members teach the trial editions of the curriculum materials. Strong emphasis is put on close connections to schools and teachers:

> "The material is shaped through interacting with teachers, teachers try it out, comment on it and we heed these comments and revise the materials."

The intense involvement with teachers and teachers' concerns is an important practial principle guiding R's curricular activities. This principle may be related to R's overriding image of "textbooks as agents of value education."

> "Teaching is not a profession, it is a sacred vocation. Teachers who do not perceive their role in this way betray their mission."

R used to be a highly motivated and creative teacher.

> "As a teacher I used to read everything about the topics I taught. This enabled me to use their educational potential."

Now the constructing of curriculum materials for other teachers to use is another way of fulfilling her educational mission. R is concerned that teachers implementing her materials will not see their full potential. This leads to the emphasis on clearly stated objectives and to the continous involvement with schools. In a sense R's actions in curriculum development can be understood if one interprets these as "minded" by two images, one, her image of "textbooks as agents of value education" and the other, her image of herself as "teacher of teachers." This second image

may account for the mode of cooperation in the team, who work together teaching each other.

3) Language Arts Curriculum Developer and Team Coordinator, M

M is an experienced elementary teacher, who has worked as a school supervisor as well as in a university-based curriculum project for about ten years. M is very interested in music and painting as well as in literature and happens to be a highly creative person. M had experience with several very different educational systems. As a child she learned in two systems simultaneously, a Polish elementary school and an afternoon Jewish school. Then the family fled to Russia during the Second World War and M went to a Soviet school from the age of 12. Finally, M went to Israel where she became a teacher in a totally different social and educational environment. The image that draws together her past and present experiences, connecting these with the future, is the image of "spontaneous change".

> "There is a constant need for change, the problem in curriculum development is how to recapture the spontaneity of the curriculum, the new creation, in the work of teachers implementing the curriculum."

The image of "learning as light and joy" that can be traced back to M's experiences with a certain teacher in her childhood can be seen to guide M's curricular activities.

> "I had several very pedantic teachers, but one, back at the elementary school in Poland, had a special way of

teaching and provided me with experiences of learning in the sunlight, of happiness and joy. This is a principle which guides me in my work to bestow happiness and light."

M emphasizes affective components in the curriculum materials and prizes its aesthetic qualities. Sponaneous change is built into the curriculum in several ways: in the continuous demand to work on personal growth and change, and in the openness of the curriculum for creative implementation by teachers and pupils alike. In M's case it seems that the impact of her images, cardinal components of her personal, practical knowledge, is partly to be discovered in the nature of the curriculum product created by her. Yet, the "spontaneous change" image shaped as well M's activities as project coordinator.

"Working with a team was a wonderful experience for me. In the process of the formation of the team something happens to everyone, we all change."

M perceives herself as very open to change and flexible and her actions as team coordinator were aimed at promoting openness and change. It is interesting to note that M says that curriculum development is an activity which never bores her and she would like to keep on being involved in it.

Conclusions and Implications

This study attempted to answer the question "what do curricular developers do?" by combining etic and emic viewpoints in investigating some curriculum projects in Israel. This account

serves a number of purposes. First it brings us close to the living reality of curriculum development, making us aware of the great divergency of processes assembled under this concept. There is not one naturalistic model of development, every project has its special blend of characteristics. Second, this kind of account can serve as a starting point for understanding the way in which the personal, practical knowledge of developers, born out of their past experiences, and leading to the future, is expressed in their actions, as well as in their communications about these actions. Third, the frameworks adopted for investigating curriculum process, as exemplified in this study, can be extended to other facets of the curriculum field such as the training of curriculum specialists. Insights into the "minded" practices of other curriculum developers may serve future developers in becoming aware of their own practical knowlege and how they use it.

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